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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/701,587	11/30/2000	Hans Peter Rath	49091	5855

26474 7590 02/13/2003

KEIL & WEINKAUF
1350 CONNECTICUT AVENUE, N.W.
WASHINGTON, DC 20036

EXAMINER

LU, C CAIXIA

ART UNIT	PAPER NUMBER
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1713

DATE MAILED: 02/13/2003

8

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/701,587

Applicant(s)

RATH, HANS PETER

Examiner

Caixia Lu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) 10 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-9 and 11 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. Claims 1-9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention for the same rationale as set forth in paragraph 3 of the previous office action, Paper No. 6. Applicant indicates in the Remarks filed on Dec. 16, 2002 that claim 1 is amended to specify a number average molecular weight, however, Claim 1 has not yet amended in applicant's Amendment filed on Dec. 16, 2002.

2. Claim 11 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In the last line of Claim 11, the alternative definition of the ether represented by formula I, R^1-O-R^2 is indefinite because when R^2 is methyl or ethyl, it is not clear what should be the R^1 group.

Claim Rejections - 35 USC § 103

3. Claims 1-9 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rath (US 5,408,018).

The instant claims are directed to polymerization process for preparation of a polyisobutene having a terminal vinylidene group content of more than 80 mol% in the presence of a complex comprising boron trifluoride, a primary or secondary alcohol, and

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an alkyl ether wherein the alkyl groups are primary or secondary alkyl groups with the proviso that at least one of the alkyl groups is a secondary alkyl group.

Rath teaches a process for preparing polyisobutene with a content of terminal vinylidene groups of more than 80 mol % and average molecular weight of 500-5000 (col.1, lines 5-10). In one of the embodiments, Rath teaches that it is beneficial to use a dialkyl ether in the polymerization process wherein the dialkyl ethers are C₂-C₂₀ dialkyl ethers and the exemplified alkyl groups methyl, ethyl, n-butyl, isopropyl, isooctyl, t-butyl, etc. (col. 7, lines 61-65 and col. 8, lines 30-42).

Rath's Examples 6, 7 and 8 teach polymerization processes for preparation of a polyisobutene having a terminal vinylidene group content of more than 80 mol% in the presence of a complex comprising boron trifluoride, 2-butanol, and an ether of 2-butyl tert-butyl ether or di-n-butyl ether.

Although Rath teaches that a tertiary alkyl group containing ether is preferred, Rath does not exclude the dialkyl ether which does not contain a tertiary alkyl group. For example di-n-butyl ether is used in Example 8 and methyl isooctyl ether and ethyl isooctyl ether listed as some of the preferred ethers (col. 8, lines 37-42).

Therefore, it would have been obvious to a skilled artisan at the time the invention was made to employ Rath's teaching to prepared a trifluoride/secondary alcohol/dialkyl ether complex wherein the dialkyl ether is methyl isooctyl ether, ethyl isooctyl ether or its homologous such as butyl isooctyl ether because such is taught in the reference and all of the embodiments of the reference are expected to work and in the absence of any showing of criticality and unexpected results.

Response to Arguments

4. Applicant's arguments filed on Dec. 16 have been fully considered.
- A. The rejection of Claim 1 under 35 U.S.C. 112, second paragraph has maintained because applicant has not amended the claim.
- B. The rejections of Claims 1, 2, and 4-9 35 U.S.C. 112, second paragraph is withdrawn in view of applicant's remarks that the ether of the instant application does not require a 2° carbon in the alkyl group directly attach to the oxygen atom of the ether.
- C. The rejections of Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rath (US 5,408,018) are maintained.

Applicant argues that the instant claims differ from Rath in that Rath requires an ether containing tertiary alkyl groups. This is incorrect. As indicated above, Rath teaches that ^{the} a tertiary alkyl group containing ether is preferred, Rath does not exclude the dialkyl ether which does not contain a tertiary alkyl group. For example di-n-butyl ether is used in Example 8, and methyl isooctyl ether and ethyl isooctyl ether are listed as some of the preferred ethers (col. 8, lines 37-42).

Applicant has attempted to show unexpected results by provide some comparative results. However, the comparative experiment is not based upon the embodiment of the closest prior art cited by the examiner, therefore, it not probative of unexpected results. MPEP 716. Further, applicant is advised to submit the comparative results in a declaration in the future.

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Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Caixia Lu whose telephone number is (703) 306-3434. The examiner can normally be reached on 9:00 a.m. to 3:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on (703) 308-2450. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1193.



Caixia Lu, Ph.D.
Primary Examiner
Art Unit 1713

CL
Feb. 10, 2003